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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/679,264	10/07/2003	Satoshi Okazaki	0171-1026P	3127
2292	7590	04/05/2006	EXAMINER	
BIRCH STEWART KOLASCH & BIRCH PO BOX 747 FALLS CHURCH, VA 22040-0747			IVEY, ELIZABETH D	
			ART UNIT	PAPER NUMBER
			1775	
DATE MAILED: 04/05/2006				

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/679,264

Applicant(s)

OKAZAKI ET AL.

Examiner

Elizabeth Ivey

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 March 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) 3-7 and 13-17 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2 and 8-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Examiner's Comments

This action is in response to after-final amendment of March 22, 2006.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1, 2 and 8-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 6,677,087 B2 to Nozawa et al.

Regarding claims 1, 2 and 12, Nozawa discloses a half-tone phase shift mask blank having a transparent substrate and a film, which preferably consists of a metal, silicon, and nitrogen or oxygen (abstract, column 4 lines 66-67). Nozawa discloses the metal in the target for making the film is preferably at least one member selected from the group including molybdenum, tantalum and tungsten (column 7 lines 18-32). Additionally, Nozawa discloses the

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use of a film of chromium compound containing oxygen, nitrogen or carbon to obtain certain light-blocking characteristics. Nozawa further discloses the use of alloys, oxides, nitrides, oxynitrides and silicides etc. of these metals to provide a translucent film with controlled transmittance (column 5 lines 1-18). Although Nozawa does not expressly show examples of combinations of the metals in a film, given Nozawa's disclosure, it would have been obvious to a person having ordinary skill in the art at the time of the invention to use the combination of any of the disclosed metals in a film with silicon and nitrogen or oxygen or carbon to provide a translucent film such as MoTaSiON or MoCrSiON with controlled transmittance.

Regarding claims 8-10, Nozawa discloses all of the limitations of claim 1 and discloses that transmission characteristics are dependent upon the materials used (column 5 lines 1-9). Nozawa does not expressly disclose the atomic ratios of the elements, however it would have been obvious to a person having ordinary skill in the art at the time of the invention to adjust the ratios for the intended application, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Regarding claim 11, Nozawa discloses all of the limitations of claim 1 and discloses optimizing transmittance as well as acid and alkali resistance through controlling Si content (column 7 lines 33-59). Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention to adjust the ratio of Si for the intended application, since it

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has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Claims 1-2 and 8-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 6,942,356 to Mitsui et al.

Regarding claims 1-2, Mitsui discloses a half tone phase shift mask having a transparent substrate and a thin film made of material including a metal, silicon and nitrogen, including nitrides of molybdenum silicide, tantalum silicide or tungsten silicide or /and mixtures of one or more of those nitrides and silicon nitride (column 4 lines 15-54). Mitsui discloses the use of metals such as tantalum, titanium, tungsten, chromium etc. Although Mitsui does not expressly show examples of combinations of the metals in a film, given Mitsui's disclosure, it would have been obvious to a person having ordinary skill in the art at the time of the invention to use the combination of any of the disclosed materials in a film.

Regarding claims 8-10, Mitsui discloses all of the limitations of claim 1 and discloses that film's phase shift characteristics are dependent upon the materials used via the inherent refractive index, but does not expressly disclose the atomic ratios of the metals (column 5 lines 1-3). However it would have been obvious to a person having ordinary skill in the art at the time of the invention to adjust the ratios for the intended application, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Regarding claim 11, Mitsui discloses all of the limitations of claim 1 and discloses optimizing transmittance as well as acid and photo resistance and etching characteristics through controlling Si content (column 6 lines 19-35). Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention to adjust the ratio of Si for the intended application, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Response to Arguments

Applicant's arguments with respect to claims 1-2 and 8-12 have been considered but are moot in view of the new ground(s) of rejection after further consideration of the art.

Examiner acknowledges amendment to claims 1, 2, 8 and 11 and withdraws objection and 112 rejections.

Conclusion

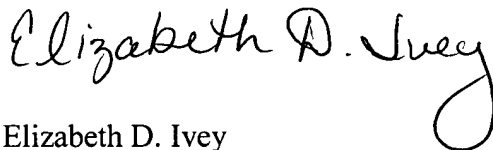
The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. U.S. Patent 5,897,976 indicates the interchangeability of metals such as Ta, Mo, Cr, W, and Zr as nitrides in the composition of half-tone phase shift masks (column 2 lines 10-15).

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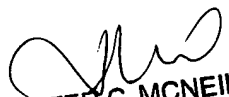
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Elizabeth Ivey whose telephone number is (571) 272-8432. The examiner can normally be reached on 7:00- 4:30 M-Th and 7:00-3:30 alt. Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jennifer McNeil can be reached on (571) 272-1540. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Elizabeth D. Ivey



JENNIFER C. MCNEIL
SUPERVISORY PATENT EXAMINER
4/3/06